

# Acton Water District

SUMMER 2008

## Water Words Notice

In reflecting on the past, and attempting to predict the future, we are at what would seem to be a turning point for our system. We are on the cusp of numerous advances in our system's complexity and upgrades to better provide quality water to our customers.

With the assistance of Wright-Pierce Environmental Engineers and Waterline Industries, we are constructing a state-of-the-art Zenon membrane filtration plant for the removal of iron, manganese and organic color at the Kennedy and Marshall wells in North Acton. The plant construction has begun, and the plant start-up should be by summer of 2009. Due to many factors, the projected cost of this facility drastically increased since the project's inception. The main issue being that we are in an unprecedented market for the manufacture and supply of the materials necessary for construction.

The Kennedy-Marshall Plant will be the first of several plants to be built in Acton for the removal of undesirable minerals and other constituents in our source waters. While we meet all primary drinking water standards, our supplies almost uniformly have high levels of iron and manganese. With regulations getting more and more stringent and all-encompassing, the necessity of these types of facilities is, and will be, a priority now and into the future. To guide us on the needs for filtering our remaining sources, we have enlisted Wright-Pierce to develop a "Treatability Study" to analyze our needs for the entire system, and determine the best available technology for the required filtration processes.

Another issue that plagues our water system is aging infrastructure. Many of you have suffered the consequences of water main breaks, and the water quality issues in the aftermath. Some of these breaks can be directly attributed to older pipes that have degraded over time. We are firmly invested in a program to upgrade what we, and our engineers, consider to be the highest priority portions of the system. Water quality truly is only a part of our job, albeit a very important part. The pipes through which our water flows are the backbone of our system, and their condition has a direct and profound impact on the quality of the product at your tap. In the very near future we will be engineering and installing new water mains to replace aged and outdated mains. This endeavor will require very strategic planning, as the significant increase in the cost of materials is felt here, also. Additionally, the flushing of our existing mains to remove sediment is a necessary annual maintenance item. Stantec Engineering Consultants will be providing a uni-directional flushing program to allow maximum flushing efficiency with minimum water lost, along with a system Master Plan to prioritize replacement of portions of the system for the next five years. This Master Plan is updated every five years.

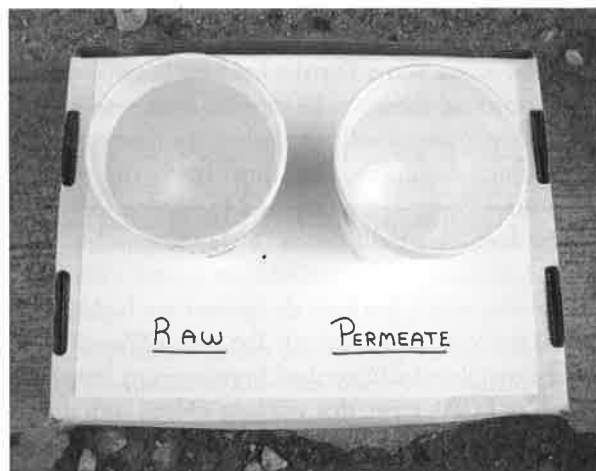
It has been my pleasure to serve the Water District for the past year. I would like to thank the employees for their commitment and support, and the customers for their patience and understanding. I look forward to a bright future with many, many new challenges on the horizon.

Thank you,



Chris Allen

*District Manager*



The planned Zenon membrane filtration plant in North Acton will remove iron, manganese and color from the water in the Kennedy and Marshall wells, greatly improving the appearance of the water.

## Acton Water District Receives State Conservation Award

On National Drinking Water Day, May 7, 2008, the Acton Water District was honored in a ceremony at the Massachusetts State House as having one of the best water conservation programs in the state. The award, co-sponsored by the Massachusetts Department of Environmental Protection, the Massachusetts Water Works Association and the Massachusetts Rural Water Association, was given to only three public water systems in Massachusetts. The award was based on the District's performance in a number of areas including system conservation measures, demand management, public education and outreach, and year-round water savings.

The Water District was presented an official citation by the State Senate and Governor's office, noting "dedicated service in maintaining a safe and abundant supply of clean water and in appreciation of your commitment to protecting this valuable natural resource."



State Senator Pamela Resor presents the Acton Water District with an award and citation for having one of the best water conservation programs in the state. From left to right: State Senator Pam Resor, Acton Water District Manager Chris Allen, Dick Kilhart with Mass Rural Water, Acton Water District Environmental Manager Jane Ceraso, and DEP Commissioner Laurie Burt.

## Kennedy/Marshall Watershed Improvement Project Installed

The Acton Water District has long been concerned about potential threats to its supplies from roadways that run close to several wells, particularly the Kennedy and Marshall wells in North Acton. The Department of Environmental Protection's Source Water Assessment and Protection (SWAP) Report ranks both of these wellfields as "highly susceptible" to contamination. Additionally, these wellfields are located within the Nashoba Brook Basin, which has been designated as a highly stressed sub-basin of the SuAsCo watershed. The Acton Water District has recently completed a Watershed Improvement Project, funded through an EOE grant, that will help address both threats to contamination of groundwater and surface water in this area, as well as provide a means to "keep water local" within a stressed subbasin.

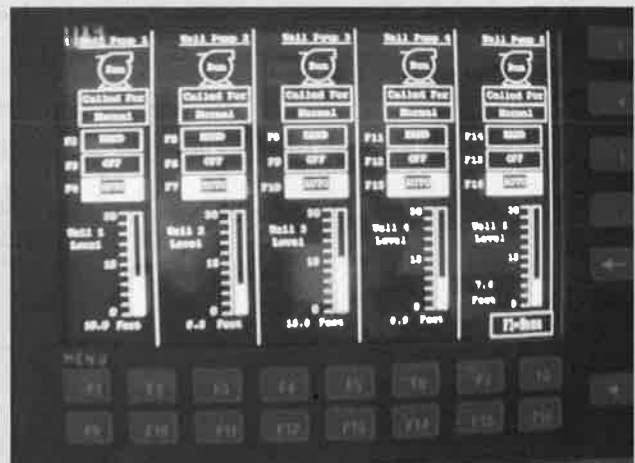
The Acton Water District's Watershed Improvement Project implemented two groundwater protection/storm water management technologies to intercept and treat road runoff, stormwater or spills



A Filterra basin is installed near the Marshall well on Route 27 in North Acton. The Filterra basin both slows down the runoff of water into the nearby ground and surface water, and filters out many of the pollutants in this runoff.

prior to its discharge to groundwater and surface water near the Kennedy and Marshall wells. A pre-cast bio-retention cell (Filterra basin) was installed at the site near the Marshall wellfield, to allow for better filtration and recharge. On the other side of Route 27, an infiltrating water quality swale was installed to intercept road runoff and any spill materials running along the grade of Route 27 towards the Kennedy Wellfield. These technologies will both serve to capture runoff headed from the road towards the wells, allowing for filtering of the suspended solids and a reduction in the velocity of water draining to the nearby brook and wetlands.

The Water District worked closely with engineers from Geo-SynTec in Acton, as well as the Cali Corporation, who conducted both installations. These new "low impact development technologies" will be monitored for their performance and will serve as good demonstration projects for how to better manage stormwater and our water supplies in a more resource-sustainable fashion.



### What was it?

The following readers correctly identified the mystery photo in the last Water Words Notice: Jim McDonough, Gloria Jacobs, Joe Robb, Jason Temple, Kaley Lindsay and Jeff De Veber. The photo was taken of the SCADA screen at the Conant II well station. The acronym SCADA stands for Supervisory Control And Data Acquisition. At the Acton Water District, the primary purpose of SCADA is to monitor, control and alarm each well and treatment plant from a central location.

# Report on Water Quality

SUMMER 2008 PWS 2002000

## Acton Water District

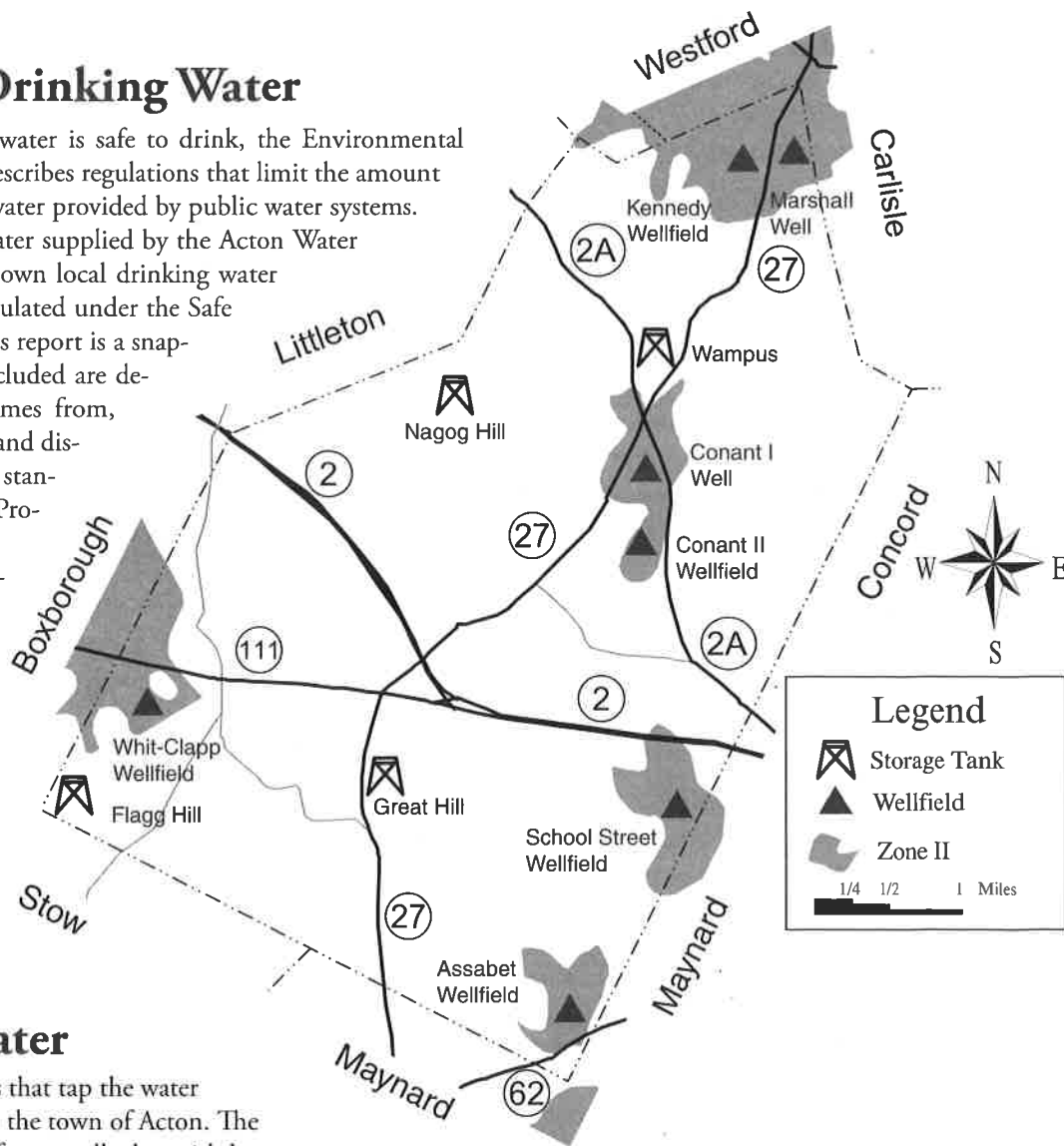
### Testing for Your Drinking Water

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. In 2007, as in years past, water supplied by the Acton Water District met EPA, state, and our own local drinking water health standards for chemicals regulated under the Safe Drinking Water Act (SDWA). This report is a snapshot of water quality in 2007. Included are details about where your water comes from, what it contains, how it is treated and distributed, and how it compares to standards set by the Environmental Protection Agency.

The Acton Water District vigilantly safeguards your water supplies by employing multiple barriers for protection, including source water protection, distribution system protection, ongoing monitoring, and treatment. Last year, we collected more than 650 samples and tested them for over 100 different potential drinking water contaminants.

### The Source of Your Drinking Water

Your water comes from wells that tap the water held in the ground beneath the town of Acton. The District has twenty-one different wells that withdraw water from seven wellfields located in various parts of town. Water from each well is pumped to treatment facilities located in each of the various wellfields, and then into the distribution system (a network of 120 miles of water mains) where it blends together and is delivered to homes, businesses, schools, and other public users. The map on this page shows the various wellfields and the critical, protective radius (called Zone II) around each wellfield.



### Protection for Your Drinking Water

- The Acton Water District employs three important “barriers” to maintain the highest possible quality of drinking water:
- A protective area called Zone II surrounds each of Acton’s wells. Land use activities that could adversely affect water quality are restricted within the Zone II area.
  - Each of Acton’s wells is treated in order to remove impurities and improve the quality of the water. Water treatment specifics are listed below.
  - The system of pipes that delivers water to your home is protected by a program that works to minimize “cross connections” between potable (intended for human consumption) and non-potable water. An example of a cross connection is a point where a drinking water pipe might connect to a sprinkler system or to an outside irrigation system.

## Why are Impurities in Your Drinking Water?

As water travels through the ground it dissolves naturally occurring minerals. It can also pick up substances resulting from animal or human activity. Contaminants that may be present in source water include:

- **Microbiological** contaminants (such as viruses and bacteria) that may come from septic systems, agriculture, and wildlife.
- **Inorganic** contaminants (such as salts and metals) may be naturally occurring or result from storm runoff, wastewater discharge, mining and farming.
- **Pesticides and herbicides** may come from a variety of sources such as agriculture, storm water runoff, and residential uses.
- **Organic chemical** contaminants are byproducts of industrial processes, and can also come from gas stations, urban storm water runoff, and septic systems.
- **Radioactive** contaminants can be naturally occurring or be the result of oil and gas production and mining activities.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some impurities. The presence of an impurity does not necessarily indicate that the water poses a health risk. The Acton Water District has compiled information on drinking water and health in our drinking water resource center. Please feel free to visit or call us for information, or call the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

## Treatment for Your Water

To meet local, state, and federal requirements, and to improve taste and appearance, the Acton Water District treats all of its water before it is supplied to our customers. The table below shows the treatment provided at each wellfield.

Treatment	Conant Well	Conant II Wellfield	Marshall Well	School Street Wellfield	Assabet Wellfield	Kennedy Wellfield	Clapp/Whitcomb Wellfield
Aeration <i>VOC removal</i>		•		•	•	•	•
Chlorination <i>disinfection</i>	•	•		•	•	•	•
Fluoridation <i>tooth decay protection</i>	•	•	•	•	•	•	•
pH Adjustment <i>corrosion control</i>	•						
Carbon Filtration <i>taste/color control</i>							•

## Rooftop Runoff Put to Use!

Rain barrels are increasingly becoming a popular tool for people who are seeking a simple way to minimize their impact on local water supplies, while still taking care of their thirsty outdoor gardens. For the fourth year, the Water District has partnered with New England Rain Barrel Company to offer discounted rain barrels designed to capture rainwater from rooftops. The rain barrels are recycled from other uses, so their production does not contribute to global warming. It only takes about a quarter inch of rainfall on an average size roof to fill up the 55-gallon barrels. The water stored in these barrels can then be used any time, even during watering bans.

On May 6th, one hundred and thirty Acton residents came by the Acton Water District to pick up their pre-ordered rain barrels. About four hundred barrels had been distributed in previous years. That means that there are now over 500 barrels installed at homes around town—and even one light rainstorm would provide over 27,500 gallons of “free” water for those homeowners to keep their gardens green!



Joan Freele, of The New England Rain Barrel Company, shows a group of Acton residents how to use their new rain barrels.

# Water Quality Data Table

The data presented in the table below are from calendar year 2007. Only compounds that were detected are reported in this table. Because water from all wellfields is blended within the distribution system, these data represent the range of water quality in all wellfields.

Substance (units)	Range of Detects	Level Allowed (MCL)	Goal (MCLG)	Typical Source	Exceeds MCL?
<b>Regulated Substances (MCL has been established)</b>					
Total Coliform	0 -1 positive samples	< 2 samples positive/month	0	Naturally present in the environment	No Monthly MCL Violations
Trihalomethanes (ppb)	0.0 - 11.0 average: 7	100	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
Nitrate (ppm)	0.0 - 2.9	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Fluoride (ppm)	0.32-1.3	4	4	Erosion of natural deposits, water treatment additive for dental health	Yes
Haloacetic Acids (ppb)	0.0 - 1.3	60	0	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
Chlorine (ppm)	0.04 -0.27 0.04:highest running annual average	4	No MCLG	Water additive used to control microbes	No
1,1 Dichloroethylene (ppb)	0.0-6.0	7	7	Discharge from industrial chemical factories	No
Toluene (ppb)	0.0-0.7	1,000	1,000	Leaks and spills from petroleum storage tanks	No
<b>Unregulated Substances (MCL has not been established)</b>					
Sodium (ppm)	14 - 85	No MCL	No MCLG	Erosion of natural deposits, road salting	Unregulated contaminants have no established MCL
MTBE (ppb)	0.0 - 0.6	No MCL	No MCLG	Gasoline additive	
Chloroform (ppb)	0.0-10.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Iron (ppm)	0.0-2.8	No MCL	No MCLG	Erosion of natural deposits	
Manganese (ppm)	0.00-1.6	No MCL	No MCLG	Erosion of natural deposits	
Chlorodibromomethane (ppb)	0.0-2.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Bromodichloromethane (ppb)	0.0-2.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
1,4 Dioxane	0.0 - 0.20	No MCL	No MCLG	Primarily used in industrial solvents	
<b>Lead and Copper (30 sites sampled in July, 2007)</b>					
Substance (units)	90th percentile	# sites above Action Level	Action Level	Typical Source	Exceeds AL?
Lead (ppb)	4.0	1	15	Corrosion of household plumbing systems; Erosion of natural deposits	No
Copper (ppm)	0.44	0	1.3	Erosion of natural deposits; Leaching; Corrosion of household plumbing systems; from wood preservatives	No

## TERMS AND ABBREVIATIONS

**MCLG:** Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**MCL:** Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**AL:** Action Level: The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.

**pCi/L:** picoCuries per liter

**ppm:** part per million by volume

**ppb:** part per billion by volume

**90th Percentile:** The concentration of a substance that falls at the top ninety percent of all values for that substance.

## Discussion of Data Table Detections

**SODIUM:** Although sodium does not have a Maximum Contaminant Level, the Commonwealth of Massachusetts does have a guideline of 20 parts per million (ppm) for sensitive individuals, such as those on very salt-restricted diets. The Acton Water District notifies the Board of Health of all sodium results, and results of the most recent sodium tests are posted at: the Acton Public Health and Nursing Service offices; the Acton Water District Information Center and website; the Acton Public Library; and the Acton Senior Center. Sodium levels in drinking water vary considerably from well to well and month to month. For the most accurate data on sodium levels at your home, an individual tap sample would be necessary.

**SOCS:** In 2007 the Acton Water District monitored all wells for all regulated synthetic organic chemicals (SOCs). These SOCs are primarily pesticides and herbicides, and are required to be monitored in all public water supplies at regular intervals. The Acton Water District is happy to report that no SOCs were detected in this or previous cycles of testing.

**MTBE:** MTBE (methyl tertiary-butyl ether) is commonly used as a fuel additive to increase the octane rating of gasoline. Health effects (based upon animal studies) associated with MTBE include kidney problems and higher tumor incidence. Recent national surveys indicate that MTBE is being found with increasing prevalence in drinking water, most commonly due to leaks in above and below ground petroleum storage tanks and pipelines. In 2007 the Acton Water District detected a very low level of MTBE—just above the detection limit and well below the EPA guideline—in the water leaving the School Street treatment facility. We will continue to regularly monitor this water for MTBE.

**PERCHLORATE:** The Acton Water District initiated sampling for perchlorate in 2004 after the Massachusetts DEP adopted an emergency regulation requiring all community public water systems to monitor for perchlorate. Perchlorate is a highly mobile inorganic compound that has created public concern in Massachusetts since being detected in drinking water near munitions facilities. Perchlorate is used in solid rocket propellant, certain blasting agents, and a myriad of other uses, including fireworks. The health effects of perchlorate have not been firmly established, but it has been implicated with thyroid tumors and fetal growth and development. We conducted perchlorate sampling on all sources again in 2007. We are happy to report that no perchlorate has been detected in the Acton Public Water supply wells.

**1,1 DICHLOROETHYLENE:** This volatile organic chemical, more commonly known as VDC, has been found throughout the plume of groundwater near the former WR Grace site in South Acton. The Acton Water District monitors both the raw and treated water from all the wells in the area of the plume. All detections of VDC are in raw water only; there was no VDC detected in treated water (the water that enters the distribution system) in 2007.

**1,4 DIOXANE:** In 2007, the Acton Water District tested the Assabet and School Street wells for 1,4 Dioxane due to the detection of this compound in a few test wells associated with the nearby WR Grace Superfund site. 1,4 Dioxane is not a regulated contaminant, and there are no required MCLs or laboratory procedures for this chemical. The EPA has listed this chemical as a probable human carcinogen, so the District hired a laboratory that had the capability to test for it at the very low quantitation level (PQL) of 0.20 ppb. Massachusetts DEP has set an Office of Research and Standards Guideline (non-regulatory level) of 3 ppb for 1,4 Dioxane. The level detected by the Acton Water District was 0.20 ppb.

**VOLUNTARY MONITORING:** In addition to the monitoring required by the Safe Drinking Water Act, the Acton Water District voluntarily conducts dozens of additional tests each year to ensure high quality water. For more information on our voluntary monitoring, please contact us.

**VULNERABILITY:** Some people may be particularly vulnerable to impurities in drinking water. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

### Do You Want to Become More Involved?

The Board of Water Commissioners meetings are scheduled on the second and fourth Monday of each month at 7:30 PM, and all citizens of Acton are welcome to attend. If you wish to attend, please call us to confirm the next meeting date. Our Annual Meeting is held on the third Wednesday of March every year. All interested persons are welcome to attend.

#### For more information, additional copies, or comments on this report, contact:

Acton Water District  
attn: Jane Ceraso  
PO Box 953, 693 Massachusetts Avenue  
Acton, MA 01720  
Phone: 978-263-9107 • Fax: 978-264-0148  
E-mail: [jceraso@actonh2o.com](mailto:jceraso@actonh2o.com)

## State of the Art Treatment Facility Will Improve Water Quality

**A** groundbreaking for Acton's new water treatment plant took place Monday, April 28 at the site of the future Kennedy and Marshall Wells Treatment plant. Representatives from the Acton Water District, Waterline Industries, general contractor for the facility, and Wright-Pierce, designers of the facility, attended.

In Acton, naturally occurring minerals from the soil cause discolored water and staining of porcelain, dishes and laundry. Although no health-based standards are being violated, the Acton Water District wants to move ahead in a proactive way to address these aesthetic problems. The treatment plant upgrades will provide the town with a reliable, high quality water supply that meets current and anticipated regulatory standards.

After conducting numerous studies of alternative treatment technologies for the removal of naturally occurring manganese, iron and color from the groundwater sources, the Zenon 500-series membrane ultrafiltration process was selected as the best process for full scale implementation.

"Membrane technology is an extremely efficient solution to our aesthetic issues. Having operated the ultrafiltration facility in Littleton, I've seen first hand what a difference it can make. I believe our customers will be very pleased with the final product, and that is our main focus," said Chris Allen, District Manager.

At a cost of approximately \$5.8 million, facility construction is scheduled for completion in summer 2009.



**Chris Allen, Acton Water District Manager, and Water Commissioners (from left to right) Ron Parenti, Steve Stuntz, and Len Phillips break ground for the new Kennedy/Marshall Water Treatment Plant.**

## Acton Water District Partners With EPA's WaterSense<sup>SM</sup> Program



**T**he Acton Water District has teamed with the U.S. Environmental Protection Agency's (EPA) WaterSense program to help consumers conserve water for future generations and reduce costs on their water bills. The aim of the new EPA program is to decrease indoor and outdoor water use through high-efficiency products and simple water-saving

practices. The program helps customers identify water-efficient products in the marketplace that have been independently certified for efficiency and performance and promotes water-saving techniques that reduce stress on water systems and the environment. Certified products may bear the WaterSense label, which makes it easy for consumers to identify and select a variety of high-quality, high-efficiency products and services for their homes and lawns. There are currently three types of products and services that bear the WaterSense label. They are high-efficiency toilets, bathroom sink faucets and accessories, and irrigation professionals. Future WaterSense products will include showerheads and weather-based irrigation controllers.

"The goal of EPA's WaterSense program is to help Americans save water and money by offering simple ways to reduce water use through water-efficient product choices," says Sheila Frace, Director of EPA's Municipal Support Division. "Using water more efficiently can help delay the need to create more supplies, saving communities money and resources, as well as ensuring that water will be available for future generations."

Today there are over 150 models of high-efficiency toilets that meet EPA's criteria for efficiency and performance. Manufacturers such as American Standard, Kohler and Toto make WaterSense toilets and are available for purchase through your plumber, online, or at retailers like Home Depot, which is a WaterSense retail partner.

While the WaterSense label is attached to products, it also applies to people that design, maintain, and audit landscape irrigation systems. These individuals have participated in training and have passed an exam to assure competency and ability to adopt water-conserving techniques to their irrigation practices. If homeowners with irrigation systems hired WaterSense irrigation partners to perform regular maintenance, each household could reduce water used for irrigation by 15 percent, or about 9,000 gallons annually. WaterSense irrigation partners also can help you design and install a new irrigation system or audit an existing one to minimize the amount of water you use, greening your yard in more ways than one.

For more information on WaterSense, and for a full list of labeled water-efficient products and irrigation certification programs, visit [www.epa.gov/watersense](http://www.epa.gov/watersense).

# Acton Water



## District

P.O. Box 953  
Acton, MA 01720

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US Postage  
**PAID**  
Permit #134  
Acton, MA

**Water Words Notice**  
is published twice a year  
for all customers of the  
Acton Water District

**District Manager**  
Chris Allen  
**Editor**  
Jane Ceraso

**Commissioners**  
Leonard Phillips  
Stephen Stuntz  
Ronald Parenti

**Design & Production**  
David Gerratt  
Amanda Wait  
DG Communications/  
NonProfitDesign.com

Printed on Recycled Paper

## Assabet 3 Permit Submitted

As part of the 1987 settlement between the WR Grace Company and the Acton Water District, ownership of the Assabet 3 well off High Street and its 400-foot radius was transferred to the District. The well had previously been used by the WR Grace Company mostly for process water for their manufacturing facility. As the Assabet aquifer is the most productive in town, the District has long been interested in adding Assabet 3 to production, alongside Assabet wells 1 and 2, in order to provide redundancy and operational flexibility.

At the Water District's annual meeting held on March 15th, 2006 the voters approved an article to proceed with the initial engineering and expenses associated with gaining regulatory approval for the use of the Assabet 3 well as a public water source. The permitting steps completed so far are a multi-day pump test to assess the quantity of water in the well and effects on nearby test wells; a battery of water quality tests to assess water quality under maximum pumping conditions; the filing of an Environmental Notification Form to ascertain potential environmental impacts; and a hydrological assessment of the Zone II (zone of influence) area for the Assabet Wellfield with all the Assabet wells pumping at maximum conditions.

The results of these investigations were compiled into a Water Management Act Permit Amendment, which was recently submitted to DEP. The DEP review will set conditions that dictate what the District will need to do to proceed with the development of this source. The Water District expects that the most substantial condition will be a major upgrade to the existing Assabet Treatment Plant. To keep abreast of developments concerning Assabet 3, you may check the Water District's website [www.actonh2o.com](http://www.actonh2o.com), and click on the "Assabet 3 Status" link.



### What is it?

Please email your answers to [webgeek@actonh2o.com](mailto:webgeek@actonh2o.com).  
Winners (and the correct answer) will be posted in the next Water Words Notice.

### Acton Water District Outdoor Water Use Restrictions

Effective May 1 – October 1

- Even numbered houses may use water outdoors: Tuesday, Thursday, Saturday
- Odd numbered houses may use water outdoors: Wednesday, Friday, Sunday
- No lawn watering from 7AM–7PM. This restriction applies to lawns only
- No outdoor water use on Mondays (includes new lawns)